

CARTOMUNDI, A NEW INTERFACE TO FIND MAPS BY GEO-LOCALISATION

ARNAUD J.L.

Maison méditerranéenne des sciences de l'homme, AIX-EN-PROVENCE, FRANCE

INTRODUCTION

CartoMundi is dedicated to the enhancement of the international cartographic heritage. It is developed by the University of Provence within the Maison Méditerranéenne des Sciences de l'Homme in Aix-en-Provence and in collaboration with the Telemme (Time, space languages, meridional Europe, Mediterranean) Laboratory.

Every institution holding, producing or selling cartographic documents can consult CartoMundi. Its main tool is a collaborative website. It consists of a basis of georeferenced data with a graphic interface that allows to select any region of the world on a planisphere. Firstly devised to meet libraries, researchers and students needs, CartoMundi can also be of interest for other fields like edition, exploitation of natural resources and tourism.

The program has benefited from different sources of support: the European program Ramsès, the TGE Adonis Integrated Access to Digital Data and Documents in the Humanities and Social Sciences, and from many local authorities of Provence, Alpes, Côte d'Azur (PACA) Region.

CartoMundi results from the work in synergy with a network of partners, a data basis and specific data processing system. This presentation will successively deals with these 3 aspects.

1. A SPECIFIC DATA PROCESSING SYSTEM

1.1. A collective catalogue structure

From the very beginning, CartoMundi has been conceived to share data following a structure of collective catalogue. Its database is divided into 3 parts:

A - Index

Description of each series through a sheet index and a list of sheets. The index gathers the generic descriptions of cartographic series and sheets. It's a state of production. It is elaborated upstream from complete collections or/and catalogues of editors. Thus, for each referenced series, the index presents a description of the entirety of these sheets, no matter their state of collections.

B - International directory

Description of each partnership institution through a notice and a cartography of geographical zones covered by the collection. The directory is available for consultation by all institutions holding, producing or selling cartographic documents. For each institution, the system offers the possibility to record a description of zones of the world it is in charge of or of which it holds representations. The directory sets out to take over the one published in 2000 by the geographic and cartographic section of The International Federation of Library Association (IFLA).

C - The collective catalogue

Each document held by a partner is registered via a link between the index and the directory. The collective catalogue is mainly composed of links between the two other parts. Each link records that a given institution of the directory holds, produces or sells a given document that is registered in the index. This link is qualified by some complementary data.

1.2. An innovative tool

On the one hand, the techniques and means mobilized by CartoMundi, such as database management, Google APIs, mash-up and collaborative platforms can't be regarded as innovations. On the other hand, the system is innovative because of the juxtaposition of these functionalities, usually used for other purposes. Here, they get mixed up according to a unique combination in its type and they are at the service of a tool with no existing equivalent. In other words, CartoMundi will be the first collective catalogue dedicated to cartographic documentation available for online consultation. In that capacity, a patent has been filed by the University of Provence in the course of 2010.

The search interface is also innovative insofar as a planisphere and not toponyms (as in classic data base) can be used to search the places. Internet users can browse the planisphere to identify and select the region from which they search maps. This system that frees itself from the use of toponyms and its various writing- Istanbul is also Constantinople, Byzance, Tasingrad, etc.- has allowed to develop an international portal open to internet users from all over the world. In addition, this interface is trilingual

(French, English and Spanish). It is also innovative insofar as it is capable of taking in charge documents from any parts of the world and at any scale - from the most general planisphere to the most detailed cadastral maps.

CartoMundi - a communication tool between its partners and the public- is a website divided into two parts: a public zone dedicated to research and a private zone for collaborators dedicated to the feeding and managing of data base. To get this result, we have developed specific functionalities for the managing of scale representation. Thus, unlike other online systems, CartoMundi is not a local system (dedicated to a region of the world, a collection or particular type of maps) and it is opened to all kind of cartographic representations.

1.3 A collaborative platform

The tool of communication CartoMundi is a website divided into two main parts: a public zone dedicated to research and consultation and a private zone reserved to partners to manage and feed the data base.

A. Public interface

The public interface offers several functionalities but it is first and foremost a tool to search documents. It is organized around an interactive planisphere from which the user can navigate (move and zooming) and select a region of the world or a place thanks to a target or a frame. This operation initiates a request that generates a list of cartographic documents taking into account two variables:

- * The geographical zone selected
- * A range of scales calculated by the level of zoom chosen to display the planisphere.

This second variable avoids to show the references of detailed maps in the list when the operator visualizes a large part of the planisphere, even though the cities in question are localized within the selected perimeter // it avoids to show the references of general maps (of the world for example) in the list when the operator visualizes a very delimited area of the planisphere (a city for example), even though the general maps also represents the city in question.

This list can be refined by four criteria:

- * The reduction scale, through a range of limited/given values.
- * The period of publication, through a range of delimited/ given dates
- * The theme, through a thesaurus
- * The place where the documents are held, through a list of geographic zones organized in several levels (continent, countries, cities, insitutions)

The type of responses depends on the tool of selection chosen by the user. A request through the target (punctual) gives a list of sheets. A request through the frame (geographic zone) gives a list of cartographic series.

Then, the user selects an object in the list. A new screen displays the data relating to the selected document (sheet or series): visualization of the perimeter represented on the planisphere, ISBD bloc and list of institutions holding the documents in question. Finally, if the document is free of right and if it has been reproduced, it can be displayed.

B. Interface for partners

Only visitors whose identity has been positively verified through a secure system can have access to this Partners Only area. This is a collaborative platform which –according to each partners activities and responsibilities, give access to three levels of participation to CartoMundi.

International Directory

For the international directory, the interface allows to edit the notice of each institution and its correspondents. It also offers a tool for geographic description that allows to quickly build a picture of the areas covered by each collection in the world/ a picture of the world with the areas covered by each collection.

Collective catalogue

Concerning the collective catalogue, CartoMundi offers three levels of localization:

- * Declaration of a sheet in partnership

The institution indicates it holds a certain number of sheet series without giving detailed information sheet by sheet. This level of declaration is required to have access to the two following levels.

- * Recording of the state of collection from a sheet index.

This principle allows to indicate the geographical coverage of the collection (based on a sheet index with tick boxes)

* Recording of the state of collection sheet by sheet

Each collection sheet is documented with details on edition and the characteristics of the copy. For the documents having several copies, it would be possible either to record them on a single sheet including an indication on “the number of copies”, or to increase the number of sheets to indicate the characteristics of each.

The participations to the collective catalogue can be directly registered online or through the transfer of files.

Index

Broadly speaking, the source files of the index are generated through trading software (spreadsheet, SIG...). Thus, the interface for the participation to the index formation includes mostly tools for transfer (selection of files, configuration, checking) and geocoding. Finally, the tools of the index allow to automatically generate sheet indexes of series.

2. A DATA BASE

2.1 A new method for data organization

CartoMundi has been elaborated upon a researcher’s experience – an historian using cartography. The idea of the project sprang from an acknowledgement of failure: a too small proportion of historical documents are referenced (and often not properly) in digital catalogues. The idea of the project sprang from a question: why such an important number of historical documents are so poorly and badly referenced in digital catalogues?

The reason is simple: the catalogue standards of the data structure in use were created for books and are ill-adapted to maps. Thus, this system doesn’t satisfy map librarians. So at the turn of the XXIst century, the referencing is still carried out through paper printed manual files and sheet indexes. This situation derives from the inadequacy between standardized digital catalogues and the demands of the readers.

First of all, looking for a map most of the time comes down to looking for the representation of a particular place, when in fact standardized digital catalogues are unable to fulfill this function. Indeed, it is not possible to record for each document the list of all included locations, at every scale, in every language and following all the historical variations.

Then, considering that a cartographic series is a set of documents, they constitute specific entities endowed with peculiar characteristics. Those can’t be described at a sheet level as must be the case when conforming to the standards.

To avoid these deficiencies, the catalogue developed by CartoMundi has adopted a rather different method of organization from the one currently in use. The latter has two characteristics:

A. A geographical field

To answer the question asked through geographical localization, -I’m looking for a map of this place-, CartoMundi has developed a graphic interface that allows to select any region of the world by a simple click on an online interactive planisphere. To guarantee its efficiency, each document description gets a geographical field that helps taking into account the perimeter it represents following an homogeneous system. This field fulfills two functionalities:

It can be interrogated from a selection of a place or geographical places on an online planisphere. The zone represented by each document can be displayed on the same type of planisphere.

B. A catalogue composed of different levels

To take into account the dependence relationship between each series, and the sheet set that composes it, the catalogue is organized in two hierarchic levels:

* At the upper level, “series”: the description of cartographic series

* At the lower level, “sheets”: the description of sheets.

To each description of series corresponds several descriptions of sheets. To each sheet description corresponds the description of one series. To ensure CartoMundi’s interoperability with other digital catalogues (at only one level), the complete notice of each sheet is composed on a monographic pattern, namely on the same pattern as the compilation of the general notice and as the specific notice of a sheet.

2.2. Best practices, cataloguing guide

The data structuration system adopted by CartoMundi has an impact on the cataloguing methods. The main departure from the most frequent uses is the importance given to the description of geographic zone covered by each document. Thus CartoMundi only partially follows the IFLA the French standard Z44-067 recommendations

In CartoMundi the fields dedicated to geographic coordinates become pointless and the list of geographic names unnecessary. These two methods of descriptions are replaced by more efficient fields faster to generate. For the cartographic series, a geomatician makes the sheet indexes from data that are seldom written on the given documents. The cataloguing of information requires the use of complementary sources like editors' catalogues and printed sheet indexes. As far as monographies are concerned, we will create a tool that will allow cataloguers to define a perimeter covered by each documents thanks to an online graphic interface.

Concerning the description of series, the standard conceived to describe sheets doesn't allow to document points that are yet essentials. The members of the steering committee have decided by mutual agreement to add several completely new descriptive fields for series description. They are particularly concerned with the method adopted to designate sheets and with the subdivisions of regions. The regional subdivision is organized by the sheet index. A field has also been added to record the number of sheets of each series. Therefore these fields have no equivalent in the other formats.

In this context, CartoMundi edits and net casts on its website a guide for cataloguing and pre-formatted files for the recording of data.

2.3. Laws considerations

Any contribution to the index database – catalogue of the production- is regarded as participation to a collective work within the meaning of article L113-2 from French Intellectual Property code.

“Collective work” shall mean a work created at the initiative of a natural or legal person who edits it, publishes it and discloses it under his direction and name and in which the personal contributions of the various authors who participated in its production are merged in the overall work for which they were conceived, without it being possible to attribute to each author a separate right in the work as created”.

Whether it be at the level of the index or of the collective catalogue, any information inserted in CartoMundi can't be deleted and this even at the request of the contributor. The system administrators reserve the right to partly or entirely delete these contributions.

The contributors to the collective catalogues benefit from the right to export the documents corresponding to their state of collections.

The results of this exportation can only be exploited within the local catalogue of the contributor. On no account can they be sold or given to a third party.

The individual contributors to the notice of the international directory have a right of modification and withdrawal of the database relating to them.

The digital reproductions will concern copyright free documents or which rights have been granted to us by the holders. These reproductions will be made available for web users according to different protocols: from a third party, via his URL / directly from the website of CartoMundi. In this case, according to the restrictions attached to each document, this one will be available for display, either with a tag, or without tag, and eventually, or for download.

In case of litigation with a partner, it will be governed and construed in accordance with French Law, and more particularly with the dispositions of French Civil Code and French Intellectual Property Code. The case would fall in the jurisdiction Aix-en-Provence court.

3. A PARTNERS NETWORK

CartoMundi has been conceived as a tool for data sharing. Even before the website opening, several institutions holding, producing and reselling cartographic documents were won over. In France, the Bibliothèque nationale (BNF), the National Geographic Institute (IGN), The Sorbonne library, the Museum of National History; abroad, several national libraries, universities, museums, scholar societies, map makers and resellers ... The two main French institutions' – BNF and IGN – have adopted the tools developed by CartoMundi to replace the index cards they still used to fill out at the beginning of 2010.

This exchange network is constantly strengthening as no comparable system can be found anywhere else in Europe or in the world. CartoMundi offers services organized on the basis of a combination of functionalities — around georeferenced data - which have never been developed before, either as a search tool, or as a collective catalogue. In this context, the presentation of these different aspects to the European congress of librarians in June 2010 has shown that CartoMundi is all set to become an international reference.

3.1. Governance

CartoMundi is supervised by a research director at the French National Center for Scientific Research (CNRS). He is assisted by a steering committee composed of persons in charge of important Parisian cartographic funds and the French Association for Cartography. As from 2012, this committee will be

taken over by a Strategic Orientation Committee composed of representatives of the contractual partners participating to the program.

3.2. Economic model

The services offered by CartoMundi are expensive. Combined support from the university and from the region with a measure of autonomy have taken charge of the initial investments, both for the development of the tool and for the cataloguing of tens of thousands of documents. They are still supporting them during the in-charge growing phase of the system. However, it is necessary to ensure its durability through the contributions of each partner. These contributions can be either in kind, or in the form of annual charge, or combination of those two.

CartoMundi is managed by a university. The goal of its economic model is not to make benefits but to ensure the durability of the system. Therefore, the benefits that are not allocated to the maintenance are invested in the content of the data base.

According to the funds and the skills at disposal, each partnership institution can contribute to the three levels of CartoMundi database. For each form of contribution there are different rights.

A. All institutions-whatever their size or geographical localization- holding, selling or producing cartographic documents can participate to the international directory. The system is entirely online. The correspondent of each institution has a right to access the interface reserved to partners. It allows to update the institution description at any time. The participation to the directory is free of charge. It is not necessary to sign any convention but the participation to the directory is compulsory to gain access to the two other levels.

B. The participation to the collective catalogue is a good means to put forward the collections of an institution through an international portal and an efficient search tool. It is also a good means for the partner to get the descriptive metadata of his state of collection at a lower cost. To participate a convention must be signed and an annual charge calculated on the basis of the number of documents actually referenced.

C. The participation to the index is reserved to institutions in charge of great collections and those making maps. The index groups together a state of the cartographic production. Gathering and organizing those data are expensive. As a consequence, institutions participating to the index benefit from a discount on the charge due regarding the collective catalogue. The deposit of an element in the index gives right to a discount 16 times superior to the annual charge that would be due for the use of an equivalent element in the collective catalogue.

For institutions selling off maps that use CartoMundi to be indexed in the directory and to display their catalogue it is not free of charge. The cataloguing of documents for sale is charged on the basis of the scale multiplied by three. This applies right from the first indexed page. The contributors to the index who neither have a map library, nor documents for sale can give their right to discount to the institution of their choice.